

UNIVERSITY OF
ILLINOIS LIBRARY
AT URBANA-CHAMPAIGN
BOOKSTACKS

CENTRAL CIRCULATION BOOKSTACKS

The person charging this material is responsible for its return to the library from which it was borrowed on or before the **Latest Date** stamped below.

Theft, mutilation, and underlining of books are reasons for disciplinary action and may result in dismissal from the University.

TO RENEW CALL TELEPHONE CENTER, 333-8400

UNIVERSITY OF ILLINOIS LIBRARY AT URBANA-CHAMPAIGN

AUG 10 1993

OCT 01 1993

NOV 18 1998

NOV 20 1998

NOV 25 2000

When renewing by phone, write new due date below
previous due date.

L162

FIELDIANA: ANTHROPOLOGY

A Continuation of the

ANTHROPOLOGICAL SERIES

of

FIELD MUSEUM OF NATURAL HISTORY

VOLUME 68



FIELD MUSEUM OF NATURAL HISTORY
CHICAGO, U.S.A.

TABLE OF CONTENTS

1. Human Biogeography in the Solomon Islands. By John Terrell 1
2. A Seriation of the Late Prehistoric Santa Maria Culture of Northwestern Argentina. By Ronald L. Weber 49

7
68
.2

FIELDIANA

Anthropology

Published by Field Museum of Natural History

The Library of the
MAY 11 1978
University of Illinois
at Urbana-Champaign

Volume 68, No. 2

January 26, 1978

A Seriation of the Late Prehistoric Santa Maria Culture of Northwestern Argentina¹

RONALD L. WEBER

FIELD MUSEUM OF NATURAL HISTORY

ACKNOWLEDGMENTS

This paper was first written for a seminar given by Donald W. Lathrap at the University of Illinois, Urbana. I wish to thank Dr. Lathrap, without whose advice and encouragement this paper would not have been written. I am also greatly indebted to Donald Collier, of Field Museum of Natural History, for kindly allowing me to study the Zavaleta collection. Donald Collier, James W. VanStone, Alberto Rex González, Peter Roe, Kathy Fine, Patricia Williams, Marilyn Miller, and Sandra Weber have read various versions of this paper and provided helpful criticism. I thank Patricia J. Brew for enhancing Figures 1 through 3 and for supplying lettering for all figures and plates. Carol Small-Kaplan, Fleur Hales, and James H. Swartchild assisted in preparing the plates. It is the author, however, who is fully responsible for any deficiencies that still remain.

INTRODUCTION

In recent years with the development of absolute dating methods and a greater concern for cultural process in archaeology, there has tended to be a disdain for studies having to do with stylistic seriation. This neglect of seriation is sad for it is one of the best tools available to the archaeologist for studying change within a single cultural entity,

¹Paper presented at the 38th annual meeting of the Society for American Archaeology, Norman, Oklahoma, 1970.

Library of Congress Catalog Card No: 77-088342

US ISSN 0071-4739

Publication 1274

49

and before one can explain the process of change through time, he must have a sufficiently fine chronology to be able to recognize the sequential changes that occur. No absolute dating method is sufficiently accurate, and while superposition is reliable within a single site, it cannot be used to study the relationships between sites.

The purpose of this paper is simply to establish a useful chronology for the Santa Maria Culture of Northwestern Argentina; however, it is important to note that this task is only a preliminary step that must be accomplished before any valid studies of Santa Maria Culture process can occur. A five-phase sequence is presented, with the latest phase, phase V, being contemporary with the Inca occupation of Northwestern Argentina, and the earliest phase pertaining to a date of about A.D. 600.

The theory of stylistic seriation rests to a considerable extent on the assumption that domains of material culture, such as ceramics, change in patterned ways through time. Innovations appear, undergo modification, and disappear with regularity. Thus, when variation related to spatial distribution and function is held relatively constant, it is possible to establish chronological sequences based on the diachronic variation of formal features. This is accomplished by arranging artifacts along a continuum so that those with the greatest number of shared attributes are clustered, while those with few traits in common are widely separated (Menzel et al., 1964). The two ends of this relative chronological sequence, or seriation, can be placed in time through the use of absolute dating methods or the association of seriated artifacts with independently dated artifacts.

This paper presents a seriation of burial urns of the Santa Maria complex of Northwestern Argentina. The sample used was originally collected from a 60-mile section of the Yocavil River and was obtained for this analysis from illustrations in the literature and from examples housed at Field Museum of Natural History (the Zavaleta collection) in Chicago (see appendix for a list of specimens and their sources). The analysis of burial urns, with their single function, eliminates the factor of variation of form due to the vessel's function, while the use of a sample from a single river valley in which a high degree of sociocultural interaction is likely to have occurred lessens the probability that variation assumed to be temporal is actually a function of regional stylistic differences. In order to be sure that the seriation is not a representation of spatial differences, only vessels with known provenience have been seriated (see appendix).

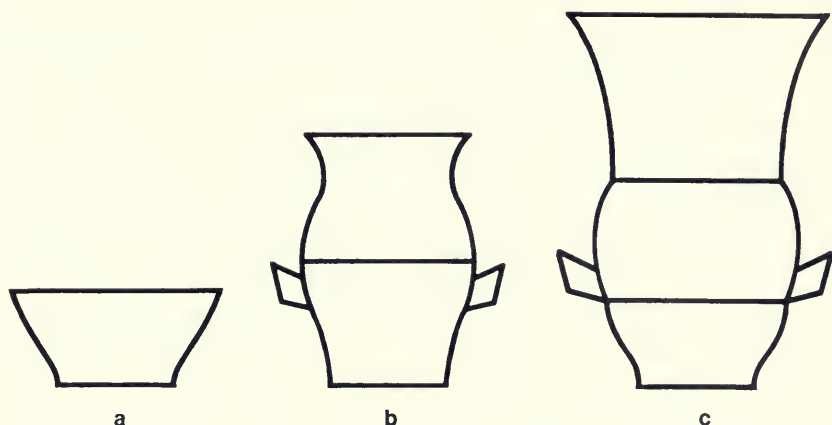


FIG. 1. Santa Maria Vessel forms

There are three Santa Maria vessel forms commonly illustrated in the literature: two urn forms and the *puco* (a shallow bowl often used as a lid for the burial urns). There are not sufficient published data on the *pucos* to make an accurate seriation (fig. 1a). Nevertheless, the *pucos* correspond in form and design to the basal segment of the burial urns (fig. 1c), and, therefore, a seriation of the large urns will correspond directly to the *pucos*. Furthermore, since the *pucos* are used as lids to urns of a corresponding age, it should be possible to seriate the *pucos* by association.

The second vessel form is similar to the Santa Maria burial urn, but it is smaller and shorter. The urns of this variety have not been included in this work (fig. 1b).

The third class of Santa Maria ceramics, the large burial urns, are the basis for the following seriation (fig. 1c).

SANTA MARIA BURIAL URNS

Santa Maria burial urns are composed of three distinct segments: the base, which is often separated from the midsection by a constriction of the body; the midsection which includes the segment from the base to the inflection where the neck begins; and the neck, which extends from this inflection to the lip of the vessel (fig. 2). This tripartite division was evidently recognized by the Santa Maria potters because each segment is treated artistically as a separate design field.

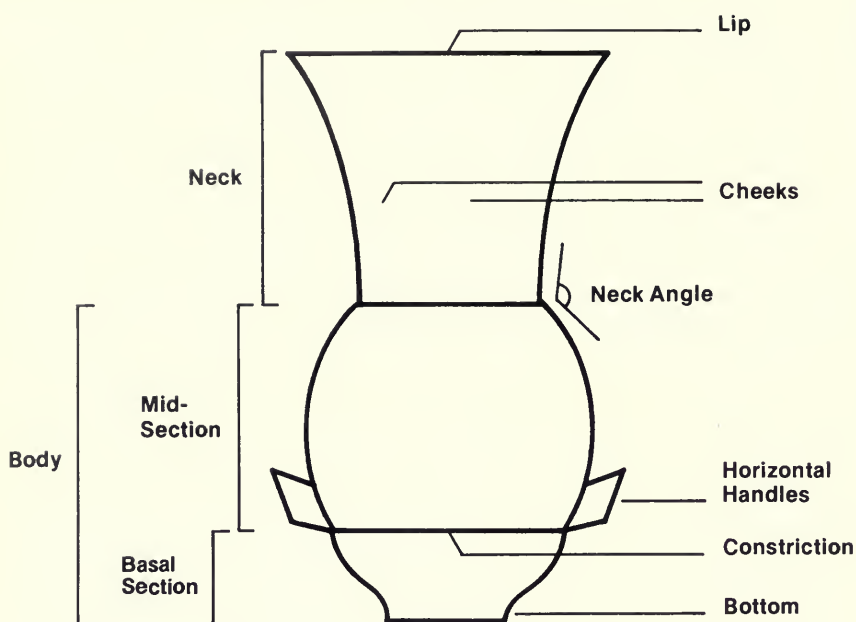


FIG. 2. Terminology for describing burial urns

These three segments of Santa Maria urns can also be treated as separate units within which categories of variation can be recognized and defined. These arbitrary categories of variation will be arranged on the seriation chart to reflect stylistic change.

There are two classes of basal segments—(a) and (b) in Figure 3. Both have concave bottoms, but basal form b is distinguished by a slight inflection in its profile.

Five variants of midsection form can be recognized (fig. 3). Form (a) is defined as an ellipsoidal shape. It joins the neck segment at an angle of 160° to 180° . Form (b) is spheroidal and joins the neck at an angle of 140° to 160° . Form (c) is ovoidal and joins the neck at an angle of 140° to 160° . Form (d) tends toward the ovoidal shape but a portion of its wall is not curved. The neck angle of this form is also 140° to 160° . Form (e) approaches a cylindrical shape and has a shoulder that creates a definite break in the curvature of the sides. The neck angle is under 140° , and there is often a slight concave curve to the sides of the body.

Five neck forms are defined (fig. 3). Form (a) has concave sides that expand towards the lip of the neck. The height of the neck is generally

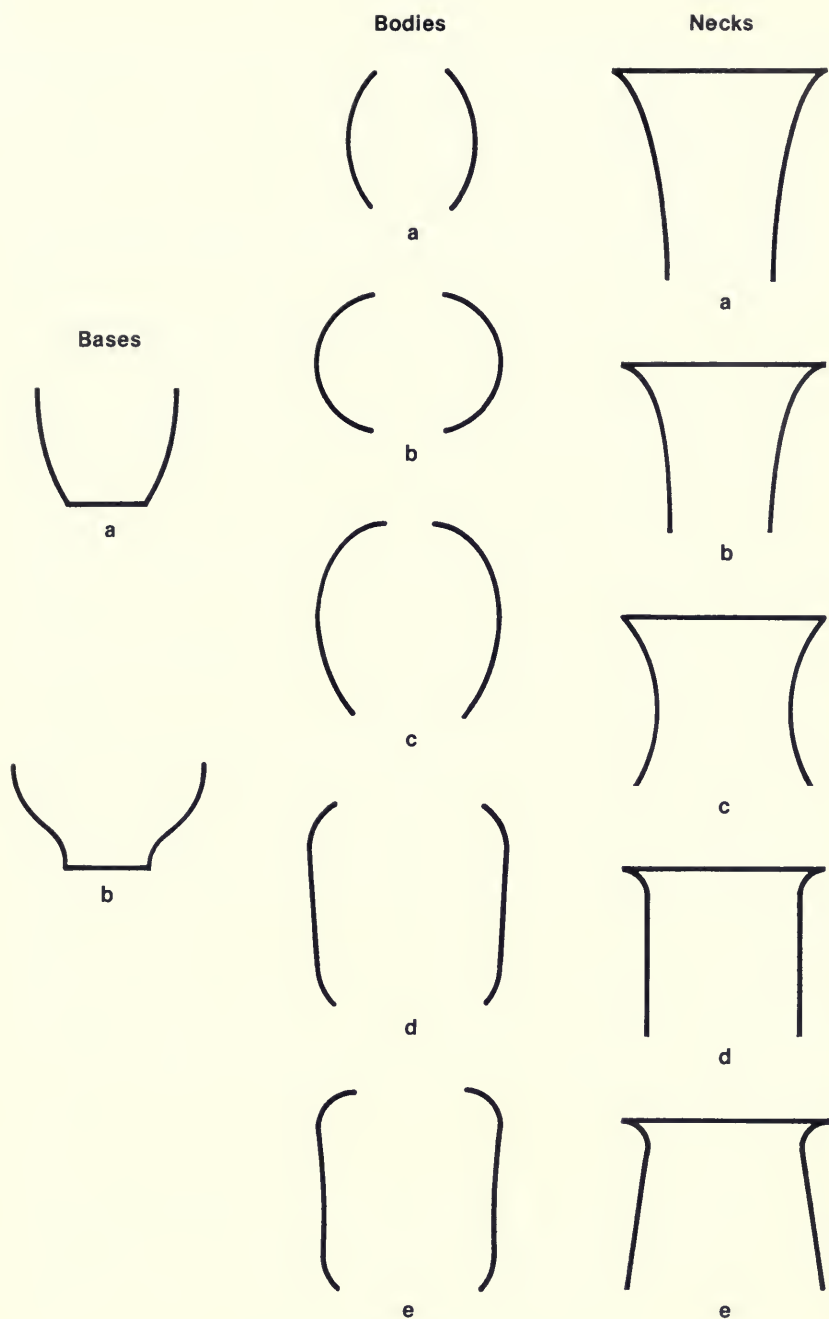


FIG. 3. I Vessel segment forms

twice its smallest diameter. Form (b) is generally straight-sided, expands toward the lip, and has a flaring rim. The height is usually about 1.5 times as high as its smallest diameter. Form (c) is concave-sided and vertical with its height about 1.2 times its smallest diameter. Form (d) is straight-sided and vertical with its smallest diameter approximately equaling its height. Form (e) is straight-sided and contracting toward the rim. Its narrowest diameter is approximately equal to its height.

EXPLANATION OF SERIATION CHART

The first vertical group of squares to the left on seriation chart 1 contains the identification number. This number corresponds to the numbers in the appendix which provide the provenience and source of illustration of the urn.

To the right of the identification number is the quotient resulting when the height of the neck is divided by the height of the body (fig. 2).

To the right of this proportion are the columns for recording the occurrence of basal segment forms; an "X" marked in a column indicates the presence of the specific form.

To the right of the basal forms are columns for the five body forms, and to the right of these are the columns for the five neck forms.

The columns with the title "handles" describes the position of the handles on the body of the vessel. "H" indicates that the handles are located above the middle of the vessel's body; "M" shows that they are at the middle; and "L" means that the handles are below the middle of the body.

The final column to the far right of the seriation chart refers to the presence or absence of a constriction marking the junction of the mid-section and basal section of the vessel. "Yes" shows that the constriction is present; "No" means the constriction is absent.

VESSEL FORM ANALYSIS

The proportion obtained by the division of the height of the neck by the height of the body decreases from top to bottom of the chart. Vessels at the top of the chart have necks far taller than their bodies, while those at the lower end of the chart have proportions that indicate their necks are shorter than their bodies. The proportions equal to one, indicating that the necks and bodies are of equal height,

SERIATION CHART 1

#	/	Base		Body form					Neck					Handles			Con- stric- tion	
		a	b	a	b	c	d	e	a	b	c	d	e	H	M	L	Yes	No
0	0/0																	
2	1.4	X		X					X						X			X
4	1.4	X		X					X						X			X
5	1.4		X	X					X						X			X
7	1.5	X		X					X					X				X
9	.9	X		X					X						X			X
10	1+		X	X					X					X				X
12	1.6	X		X					X					X				X
13	?	X		X					?					X				X
14	1.2		X	X					X						X			X
15	1.3		X		X					X				X				X
17	1.2		X		X					X					X			X
19	1.4		X		X					X					X			X
20	1.5		X		X				X					X				X
21	1.2	X			X				X						X			X
22	1.2		X		X					X					X			X
23	.9	X			X					X					X			X
24	1.2	X			X					X					X			X
25	1.2		X		X					X					X			X
26	1.4		X		X					X					X			X
27	1.2	X			X					X					X			X
28	1.3		X		X					X					X			X
30	1.2		X		X					X					X			X
31	1	X			X					X						X		X
32	1		X			X				X					X			X
34	1		X			X				X				X				X
35	1		X			X				X					X			?

SERiation CHART 1 (Continued)

#	/	Base		Body form					Neck					Handles			Constriction	
		a	b	a	b	c	d	e	a	b	c	d	e	H	M	L	Yes	No
0	0/0																	
37	1		X			X						X		X				X
38	1		X			X						X				X		?
40	.7		X				X					X				X		X
41	1		X					X		X						X		X
45	.9		X					X		X						X		?
63	.9		X			X					X					X		?
64	1		X			X					X					X		?
47	.8		X			X				X						X		?
48	1		X			X					X					X	X	
49	.9	X				X					X					X	?	
52	1	X				X				X						X	X	
46	.8		X				X				X					X	X	
50	.9		X				X				X					X	X	
51	.8		X				X					X				X	X	
53	.8		X				X				X					X	?	
54	.8		X				X				X					X	X	
62	.7		X				X				X					X	?	
66	.9		X				X				X					X	?	
67	.9		X				X			X					X		?	
69	.6		X				X			X						X	X	
72	.6		X				X			X						X	?	
60	.6		X				X					X				X	?	
78	.8		?				X					X				X	?	
73	?		X				X					X				X	X	

SERiation CHART 1 (Continued)

#		Base		Body form					Neck					Handles			Con- stric- tion	
		a	b	a	b	c	d	e	a	b	c	d	e	H	M	L	Yes	No
0	0/0																	
83	.7		?				X					X				X	X	
86	.9		X				X					X				X	X	
88	.8		?				X					X				X	X	
89	.7		X				X					X				X	X	
82	.6		X					X				X				X		X
71	.6		X				X					X				X	X	
68	?	X					X					?				X	X	
57	.7		X				X						X			X	X	
58	.7		X					X				X				X	X	
79	.8		X				X					X				X	X	
61	.8		X				X					X				X	X	
65	.8		X				X					X				X	?	
85	.7		?				X						X			X	?	
91	.6		X				X					X				X	X	
55	.8	X					X			X						X	X	
56	.8		X				X					X				X	?	
74	.7		X				X					X				X	X	
80	.8		?				X						X			X	?	
81	.8		X				X					?				X	?	
84	.8		X				X					X				X	X	
87	.8		X				X					X				X	X	
92	.6		X				X					X				X	?	
93	.8		X				X					X				X	X	
94	.7		X				X					X				X	X	

mark the transition from long necks and short bodies to short necks and long bodies.

Bases with inflections occur most abundantly in the lower part of the chart, while bases lacking any inflection are most commonly found at the upper part of the chart.

Vessels with ellipsoidal bodies occur at the top of the chart and are followed below by spheroidal bodies and then by ovoidal bodies. Body forms (d) and (e) are grouped respectively at the bottom of the chart. It is interesting to note that this sequence corresponds to Marquez Miranda and Cigliano's (1957, p. 10) category of volume —i.e., the volume increases gradually from the top to the bottom of the chart.

The shape of the neck shifts from being flared and concave-sided at the top of the chart to being vertical and straight-sided.

Handles definitely are located at or above the middle on all vessels in the upper part of the chart, while they are found below the middle on almost all vessels in the lower part of the chart.

The occurrence of constriction in the body further corresponds to the established sequence. All vessels in the upper portion of the chart lack any body constriction.

The arrangement in chart 1 is the best ordering of vessels. Minor shifts in the position of vessels on the chart will not greatly affect the seriation, but if one makes major changes in the order of specimens, he will break the diagonal arrangement of "X's" which shifts from the top left to the bottom right in the columns of any form category.

It is evident that the sequence established by the seriation chart is correct. However, one might argue that the features involved are inter-related in such a way that change in one determines the pattern of the others, and consequently, the shifts of form do not represent style change through time. Therefore, in order to test the validity of the sequence, a second seriation chart is presented here using design elements. It is difficult to justify the argument that variation in design is also directly determined by variation of vessel form.

It is also important to note that the earliest or latest end of the seriation has not yet been established. However, substantial evidence will be used to support a sequence in which vessels at the top of the seriation chart are most recent.

DESIGN VARIABLES

The specimens on the seriation chart for design, chart 2, are arranged in the same order as those on chart 1. The vertical columns are grouped and labeled with Roman numerals. Each numeral refers to a category of design elements. Within each category different varieties are marked by identifying letters which refer to the description of specific designs. In order to make this chart more compact, some similar designs have been combined as members of a single variety. Different members of the same design are distinguished by Arabic numerals; however, to avoid possible confusion, the reader may think of these numerals as equivalent to "X's" and thus ignore the variation within each variety.

SERIATION CHART COLUMNS (pp. 60, 61)

Column I: the general design technique used on the body of the urns. Variety (a) indicates the occurrence of linear elements in the design, while variety (b) refers to the occurrence of filled surfaces in the design. Variety (c) indicates the occurrence of negative design (i.e., it indicates that the artist seems to have been equally or more concerned with the areas which remained unpainted). On some urns all three techniques will have been used (fig. 4).

Column II: design layout of the neck or cheeks of the vessel. The letters refer to the layout, while the numbers refer to the particular member of the layout. Layout (a) is based on the division of the cheek panel into three bands. There are three members to this layout. (See fig. 5) Layout (b) is composed of anthropomorphic warriors. Layout (c) is a design with a step fret and a snake in two vertical bands, one above the other. The design is always inverted on opposite cheeks so that serpents and frets on opposite cheeks are diagonally opposed to each other. Layout (d) is based on the occurrence of two bands of fret designs on the cheeks. Layout (e) is a rhea scroll (i.e., a rhea that has been depicted as a scroll design). Layout (f) is a realistic rhea. Layout (g) is a zoned hatched design.

Column III: particular body design layouts. The numbers refer to the precise design of each layout. Layout (a) consists of checker-board or cross-hatched areas bound by curved lines. The curved lines are often arms with attached hands. The design of the basal section is always distinct from the midsection design. Layout (b) also has a distinct design on the basal portion of the body. The layout on the

DESIGN SERIATION CHART 2

#	I			II			III			IV			V			VI			VII			VIII			IX			X			XI			XII			XIII
	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c				
0																																	X				
1	X		3						X			0	3																			X					
2	X	4	3									6	3																			X					
3		5	X						X			7	3																			X					
4		7	X									7	3																			X					
5		9	X									9																				X					
6		10	X									7																				X					
7		12	X									3																				X					
8		13	X									7	2																			X					
9		14	X									7	3																			X					
10		15	X									7																				X					
11		17	X									7																				X					
12		19	X									6																				X					
13		20	X									5	3																			X					
14		21	X									7																				X					
15		22	X									7	3																			X					
16		23	X									7																				X					
17		24	X									7	1																			X					
18		25	X									7																				X					
19		26	X									7																				X					
20		27	X									7	3																			X					
21		28	X									7																				X					
22		29	X									7	4																			X					
23		30	X									1																				X					
24		31	X									6																				X					
25		32	X									7																				X					
26		33	X									7	4																			X					
27		34	X									7																				X					
28		35	X									7	4																			X					
29		36	X									7																				X					
30		37	X									7																				X					
31		38	X									7																				X					
32		39	X									7	4																			X					
33		40	X									7																				X					
34		41	X									7																				X					
35		42	X									7	4																			X					
36		43	X									7																				X					
37		44	X									7																				X					
38		45	X									7																				X					
39		46	X									7																				X					
40		47	X									7																				X					
41		48	X									7																				X					
42		49	X									7																				X					
43		50	X									7																				X					
44		51	X									7																				X					
45		52	X									7																				X					
46		53	X									7																				X					
47		54	X									7																				X					
48		55	X									7																				X					
49		56	X									7																				X					
50		57	X									7																				X					
51		58	X									7																				X					
52		59	X									7																				X					
53		60	X									7																				X					
54		61	X									7																				X					
55		62	X									7																				X					
56		63	X									7																				X					
57		64	X									7																				X					
58		65	X									7																				X					
59		66	X									7																				X					
60		67	X									7																				X					
61		68	X									7																				X					
62		69	X									7																				X					
63		70	X									7																				X					
64		71	X									7																				X					
65		72	X									7																				X					
66		73	X									7																				X					
67		74	X									7																				X					
68		75	X									7																				X					
69		76	X									7																				X					
70		77	X									7																				X					
71		78	X									7																				X					
72		79	X									7																				X					
73		80	X									7																				X					
74		81	X									7																				X					
75		82	X									7																				X					
76		83	X									7																				X					
77		84	X									7																				X					
78		85	X									7																				X					
79		86	X									7																				X					
80		87	X									7																				X					
81		88	X									7																				X					
82		89	X									7								</																	

DESIGN SERIATION CHART 2 (Continued)

#	I			II			III			IV			V			VI			VII			VIII			IX			X			XI			XII			XIII		
	a	b	c	a	b	c	d	e	f	a	b	c	d	e	f	a	b	c	d	e	f	a	b	c	d	e	f	a	b	c	d	e	f	a	b	c	d	e	f
50	X	X	X						6																														
51	X	X	X	X					6																														
53	X	X	X		3				6																														
54	X	X	X		3				6																														
57	X	X	X		1																																		
58	X	X	X		1																																		
59	X	X	X		3				6																														
60	X	X	X		1				6																														
61	X	X	X		3				6																														
62	X	X	X		0				6																														
63	X	X	X		X				6																														
64	X	X	X		X				6																														
65	X	X	X		X				6																														
66	X	X	X		X				6																														
67	X	X	X		3				6																														
68	X	X	X		1				6																														
69	X	X	X		3				6																														
70	X	X	X		0				6																														
71	X	X	X		2				6																														
72	X	X	X		2				6																														
73	X	X	X		1				6																														
74	X	X	X		2				6																														
75	X	X	X		2				6																														
76	X	X	X		2				6																														
77	X	X	X		0				6																														
78	X	X	X		2				6																														
79	X	X	X		2				6																														
80	X	X	X		2				6																														
81	X	X	X		1				6																														
82	X	X	X		1				6																														
83	X	X	X		1				6																														
84	X	X	X		3				6																														
85	X	X	X		3				6																														
86	X	X	X		3				6																														
87	X	X	X		3				6																														
88	X	X	X		3				6																														
89	X	X	X		3				6																														
90	X	X	X		3				6																														
91	X	X	X		3				6																														
92	X	X	X		3				6																														
93	X	X	X		3				6																														
94	X	X	X		3				6																														

Variety a



Variety b



Variety c



FIG. 4. II General design techniques

Variety a



1



2

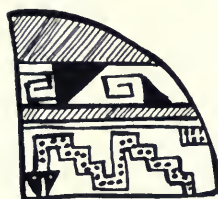


3

Variety b



Variety c



Variety d



1



2



3

Variety e



Variety f



Variety g



FIG. 5. III Cheek design layouts

Variety a

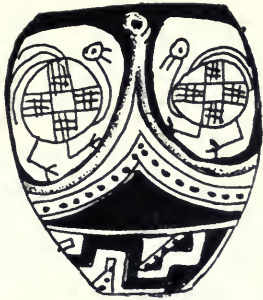


Variety b

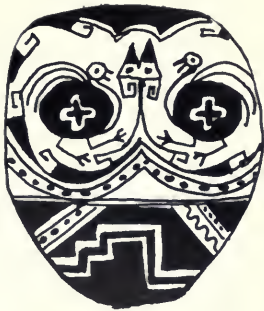


FIG. 6. IV Body design layouts

Variety c



1



2



3

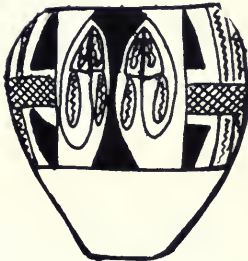


4

Variety d



1



2



3



4

FIG. 6. *Continued*

Variety e



1



2



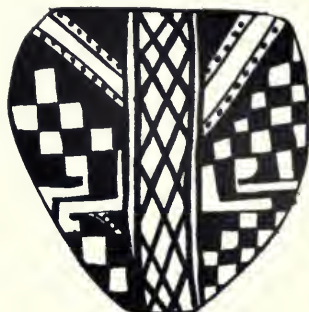
3

FIG. 6. *Continued*

Variety f



1



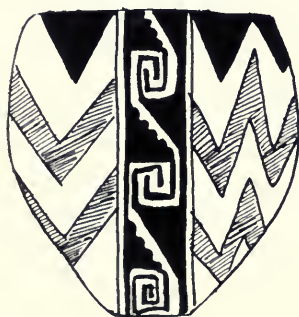
2



3



4



5



6

FIG. 6. *Continued*

Variety f



7



8



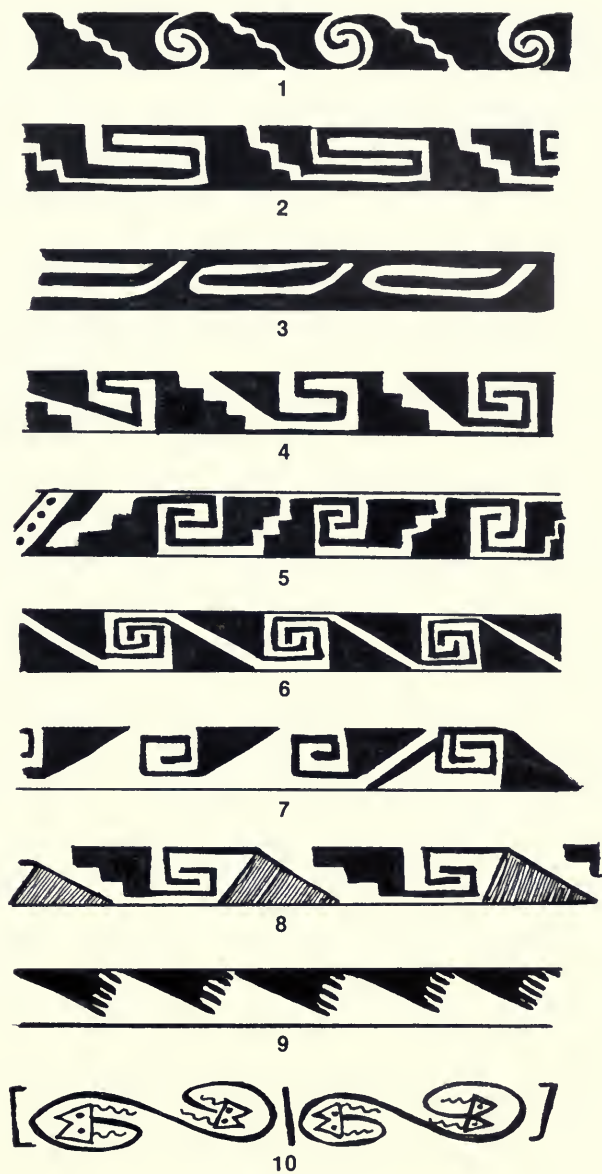
9



10

FIG. 6. *Continued*

Variety a



Variety b

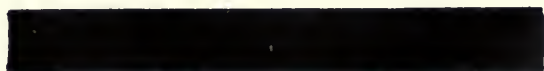
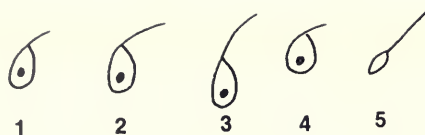
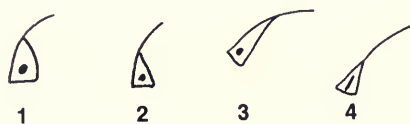


FIG. 7. V Interior design bands

Variety a



Variety b



Variety c



Variety d

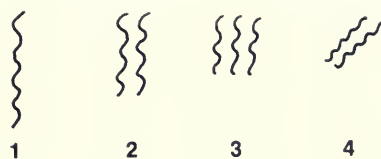


Variety e

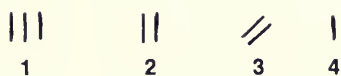


FIG. 8. VI Eye designs

Variety a



Variety b



Variety c

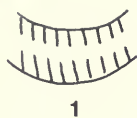


Variety d

(No representation of tears)

FIG. 9. VII Tear designs

Variety a



Variety b



Variety c



Variety d



FIG. 10. VIII Mouth designs

Variety a



Variety b



Variety c



FIG. 11. IX Rhea designs

Variety a



Variety b



Variety c



FIG. 12. X Snake head designs

Variety a



Variety b



Variety c

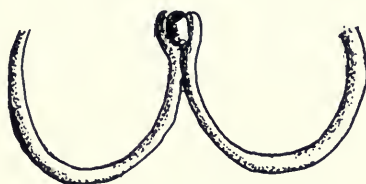


FIG. 13. XI Arm designs

Variety a



Variety b



Variety c



FIG. 14. XII Lateral stripe designs

midsection is divided into two lateral panels by a vertical interlocking step-fret. Zoomorphic figures usually decorate the lateral panels. Layout (c) consists of up-curving arms defining two circular areas within which rhea or frog motifs occur. The basal segment bears a separate design. Layout (d) is a motif of triangular-headed serpents or frogs with no curving arms or step-fret panels. Layout (e) is related to layout (a) and (c), however, the zones defined by the up-curving arms contain abstract zig-zag serpents. This zig-zag design is shown with triangular heads on the Lafone Quevedo urn and other early Santa Maria vessels (vessel 93). Layout (f) is composed of two panels divided by a vertical zone of interlocking step-frets. The lateral panels contain linear and zig-zag serpent body designs. The basal segment and midsection are joined to form a single design field in this layout (see fig. 6a - f).

Column IV: relief decoration. Variety (a) pertains to adornos located above the lateral handles, (b) the occurrence of relief brows and eyes, and (c) the occurrence of relief hands and arms.

Column V: design in the interior of the urns. The design occurs as a band 3 to 5 in. wide around the uppermost part of the interior. Variety (a) is a complex pattern of step-frets, while (b) is a solid band. Unfortunately, the sample of urns where these varieties are discernible is too small to determine significant variation within the two-part division (fig. 7).

Column VI: five varieties of eye design. Variety (a) is teardrop-shaped; (b) is triangular; (c) is circular; (d) is circular but includes a broad trailing line; (e) is teardrop-shaped but differs from variety (a) by having a dash for the pupil instead of a dot (fig. 8).

Column VII: the treatment of tears. Variety (a) is a tear design based on a wavy line, while (b) is based on a straight line or lines, and variety (c) is "J"-shaped. An "X" under (d) indicates that no tears occur in the eye design, while "O" indicates that there is no eye design. This motif is called a "tear" with some reservation. One should note that in cheek design (c), the tears also become the beak of a rhea. Many other of these eye "tear" designs also may be viewed as heads of rhea birds (fig. 9).

Column VIII: the various mouth forms. Variety (a) is curved upward; (b) is large and trapezoidal; (c) is a down-curved form; (d) consists of small rectangular mouths. Varieties with more than one member are recorded by the number of the appropriate member (fig. 10).

Column IX: the treatment of rhea designs. Variety (a) has an amorphous, curvilinear body with broad, outlined feet and neck. Variety (b) has a lunate-shaped body with a single broad line representing the neck, while (c) has a circular or oval body with single, fine lines representing the feet and neck (fig. 11).

Column X: three forms of snake heads. Variety (a) is triangular shaped. Variety (b) is "M"-shaped, and (c) is a split design made up of two back-to-back, "four"-like figures (fig. 12).

Column XI: treatment of hands and arms on the anthropomorphic urns. Variety (a) consists of solid ribbon-like arms. Variety (b) is distinguished by short linear fingers and rectilinear hands, while (c) includes all applique arms and corresponds to variety (c) of column IV, but here it is contrasted to two forms of painted arms (fig. 13).

Column XII: the lateral stripes which occur on all vessels. Variety (a) is a rare form with the upper section of the stripe composed of linear elements. Variety (b) is a solid narrow stripe which does not extend through the lateral handles, while (c) is a wider solid stripe which extends through the lateral handles and covers them as well (fig. 14).

Column XIII: occurrence of two or three colors in the design. Variety (a) is black-on-white or black-on-red bicolor, while variety (b) is black-and-red-on-white or black-and-red-on-plain tricolor.

DESIGN ANALYSIS

Column I illustrates a pattern in which the linear designs are almost exclusively the form of decoration at the top of the chart. Further down, solid areas of paint become more common. Approaching the bottom of the chart, negative design appears, and at this point all three varieties are present simultaneously.

Column II shows that varieties (a) and (b) cluster at the upper part of the chart, while (c) occurs only in the central portion. Varieties (d) and (e) occur largely toward the end. Varieties (f) and (g) are too rare to establish a pattern. One should note that this sequence parallels the direction of Column I; i.e., the most linear cheek designs are at the upper portion of the chart, while the ones at the lower end are composed of solid zones of color.

Column III illustrates the occurrence of body design variety (a) almost exclusively at the top of the chart. Design (b-1) also occurs only near the top. Only variety (b-2) occurs further down. Variety (d) is also restricted to the upper portion of the chart. Variety (c) is found throughout the chart; however, (c-4) is common at the top, while (c-1) is common at the bottom. Body designs (e) and (f) only occur at the lower end, while varieties (f-6) and (e-1) are most typical of the lower portion. It seems probable that all body designs have their origin in layouts (f-6) and (e-1). (A future paper on the iconography of Santa Maria urns will discuss the apparent bimodality of these body design layouts.)

The relief decoration of **Column IV** produces a two-part division. Few adornos occur in Santa Maria ceramics, but those that do occur are found at the top of the chart. Modeled eyes, brows and arms occur exclusively in the lower half.

Bands of design listed under **Column V** form a significant distribution, although there are not a great many specimens on which the varieties can be recognized. Variety (a) only occurs in the upper portion of the chart, while (b) is only found in the lower portion.

The eye varieties seem to occur more or less randomly (**Column VI**), but there are greater variations of eye form in the lower part of the chart.

No clear pattern can be recognized for the varieties of tears of **Column VII**, but Marquez Miranda and Cigliano (1957, p. 13) considered this feature to be significant.

The mouth varieties of **Column VIII** show a definable trend from large to small and at the end of the chart no mouths occur. Mouths at the top are large and crescent-shaped. Mouths at the lower and central sections are rectangular and small.

Rhea designs of **column IX** also form a consistent pattern. Variety (a) consistently occurs in the upper portion of the chart, while variety (b) is found only in the central area. Variety (c) occurs on urns at the lower and central sections of the chart. Rheas are rare in the lower section of the chart.

Column X shows only slight patterns in respect to individual varieties, although it is evident that snakes are most common in the upper half of the chart. The few occurrences of variety (a) are found only at the top of the chart, while varieties (b) and (c) are found throughout the middle section. Variety (c) also occurs at the bottom of

the chart where it is found attached to the linear zig-zag design of body design layout (f), while it occurs most frequently on vessel necks in the central portion of the chart.

Column XI shows a clustering of variety (a) toward the top of the chart. Variety (b) is rare, but tends to occur in the central section, while variety (c) occurs exclusively in the lower half.

Column XII illustrates a tendency for lateral stripes to become continuous as one approaches the lower end of the chart. Variety (c) occurs only at the lower end of the chart.

Column XIII illustrates a bicolor-tricolor, bipartite division. Bicolor vessels are most common in the upper half of the chart, while tricolor vessels are most common in the lower half.

RELATIVE TIME

Marquez Miranda and Cigliano (1957) have divided Santa Maria urns into two types which they consider to reflect chronology. They conclude that the earliest of these is Santa Maria tricolor, and the latest is Santa Maria bicolor. The tricolor is noted to have a greater volume; an elliptical, horizontal cross-section, and a more pronounced lip (pp. 10, 11). They continue to state that relief motifs are found associated with tricolor (p. 13). Snakes and rheas are thought to be most common in tricolor urns. Furthermore, all free space is filled with "*un verdadero 'horror al vacio'*" (p. 13). According to Marquez Miranda and Cigliano, bicolor urns tend to be taller with smaller bodies, and the horizontal cross-section tends to be circular. They believe tears to be most common in the tricolor. Finally, they note that designs occur in the interior of bicolor urns.

This bipartite chronology is largely correct. However, in the small sample of vessels used in this paper the horizontal cross-section, the occurrence or absence of tears, and the occurrence of snakes and rheas seemed to be random in their distribution. Further study may show some quantitative differences. The two-part division is valid for Santa Maria designs, but a continuum such as this sequence may be cut at other points as well; e.g., a three-part division could be used to separate transitional pieces. However, the best and most useful way of dividing the sequence is to define the phases primarily by differences in vessel body shapes. Phase I corresponds to mid-section (e), II to (d), III to (c), IV to (b), and V to (a). Within this five-part division early and late pieces can sometimes be recognized;

i.e., early phase I, late phase I. The five phases of Santa Maria burial urns can be distinguished by the following attributes.

PHASE I. (Barrel-shaped body)

1. Neck/body proportion under 1
- * 2. Body is cylindrical
- * 3. Sharp neck angle, 140° or less
- * 4. Neck is vertical or constricting
5. Base is modified
6. Rim is modified
7. Handles are below center of body
8. Constriction is present
- * 9. Design is of solid fields, and negative designs occur. Designs are carefully executed. Lineal elements occur minimally.
10. Cheek features are not significant
11. Body design similar to Phase II
12. Relief occurs
13. Solid band occurs in interior
14. Eye feature (e) is most common
15. Tears are not significant
- * 16. Small rectangular mouths or no mouth at all
17. Rhea form (c) occurs
18. Snake heads occur
19. Arm features (c) and (b) occur
- * 20. Lateral stripe is always continuous
21. Tricolor in all cases

Vessels 55, 56, 61, 65, 74, 75, 79-82, 84, 85, 87, 90-97 are of this phase.

PHASE II. (Modified ovaloid body)

1. Neck/body proportion under 1
- ** 2. Ovaloid body with straight sides
- ** 3. Body angle from 140° to 160°
 4. High proportion of straight vertical necks. Feature (c)
 5. Modified base
 6. Tendency for modified rim
 7. Handles below middle of body
 8. Constriction almost always present
 9. Designs are made up largely of fields of color
10. Cheek features (d-1, 2, and 3) are most common, also cheek (e)
11. Body features (c, e, and f) occur frequently
12. Applique is common
13. Interior design is a solid band
14. Eye form (e) is common

* Indicates the most diagnostic features of phase I.

** Indicates features which differentiate this phase from phase I.

15. Tears are not significant
16. Small rectangular mouths
17. Rheas are rare but feature (c) occurs
18. "M"-shaped and double four-shaped snake heads occur
19. Feature (b) arms are most common
- **20. Lateral stripes are either continuous or discontinuous
21. Tricolor dominates

Vessels 45, 46, 50, 51, 53, 54, 62, 66, 67, 72, 73, 76, 77, 78, 82, 60, 83, 86, 88, and 89 are of this phase; 71, 68, 57, 69, 44, and 58 probably belong to this phase; 98 and 70 are of form type two and may belong in this phase.

PHASE III. (Ovaloid body shape)

- * 1. Neck/body proportion approximately 1
- * 2. Ovaloid body shape is most common
3. Neck angle from 140° to 160°
4. Neck form (c) is characteristic
5. Generally modified base
6. Generally modified rim
7. Handles are generally located below the middle of the body
- * 8. Vessels with and without constriction occur
- * 9. Linear elements are equally important as fields of design
10. Neck feature (d) is characteristic
11. Body designs insignificant
- *12. Relief design is rare
- *13. Designs and plain bands occur in interiors
14. Eye form (c) is most common
15. Tears are not significant
16. Mouth feature (d) is most common
17. Rhea features (c) and (b) are common; (b) is found only in this phase.
18. Snake heads (b and c) occur
19. Arm features (a and b) occur
20. Lateral stripe is discontinuous
21. Tricolor is most common but bicolor exists

This phase includes vessels 32, 34-43, 47-49, 52, 59, 63, and 64.

PHASE IV. (Spheroidal body)

- † 1. Neck/body proportion from 1 to 1.4
- † 2. Spheroidal body
3. Neck angle from 140° to 160°
4. Curved or straight out-flaring neck
5. Generally a modified base
6. Rim is either modified or not

**Indicates features which differentiate this phase from phase I.

*Indicates the traits which differentiate this phase from phase II.

† Indicates features which distinguish this phase from phase III.

- † 7. Handles are located on the central part of the body or higher
- † 8. Constrictions do not occur
- 9. Design is generally linear in quality
- 10. Cheek feature (e) is characteristic
- 11. Body design (b) is common
- 12. No relief occurs
- 13. Interior design is complex
- 14. Triangular-shaped eyes are common in this phase
- 15. Tears are rare
- † 16. Mouths are large and curved
- † 17. Rheas are of form (a)
- 18. "M"-shaped snake heads are common
- 19. Arm feature (a) occurs
- 20. Lateral stripe is discontinuous
- 21. Urns are almost always bicolor

This phase includes urns 16-31 and 33.

PHASE V. (Ellipsoidal body)

- * 1. Neck/body proportion 1.4 or more
- * 2. Ellipsoidal body
- * 3. Neck angle from 160° to 180°
- 4. Flaring neck
- * 5. Tendency for unmodified base (Base feature a)
- 6. Unmodified rim
- 7. Handles located at middle or above
- 8. No constriction
- 9. Tendency toward linear design
- * 10. Cheek feature (a-3)
- 11. Body design (a) is most common
- * 12. Adornos occur
- 13. Irregular step frets in interiors
- 14. Tear-drop shaped eyes with nearly vertical trailing lines.
- * 15. Single wavy tears
- 16. Large curved mouths
- 17. Feature (a) of the rheas
- 18. Triangular snake heads
- 19. Feature (a) of arm features
- 20. Discontinuous lateral stripe
- 21. Bicolor painting

This phase includes vessels 1-15.

DISCUSSION

The Santa Maria complex is the most recent prehistoric manifestation found in the Calchaqui Valley, and with little doubt it pertains to the Calchaqui Diaguita who were inhabiting the area when the

† Indicates features which distinguish this phase from phase III.

* Indicates features that distinguish this phase from phase IV.

Spanish first arrived (Marquez Miranda, 1963, p. 637). This late position for Santa Maria does not, however, preclude that it has great time depth. In fact, the relatively great amount of stylistic change that occurs through the five-phase sequence suggests a rather great duration of time.

Three radiocarbon dates from Santa Maria habitation sites seem to support a late date with considerable time depth. The most recent of these dates, A.D. 1340 ± 85 (IVIC-178) taken from the remains of the charred roof of habitation 1 of Cerro Mendocino, Punta de Balasto, is associated with Santa Maria tricolor and San Jose types of ceramics (Cigliano, 1966, pp. 6, 7). If this date is accepted it must pertain equally to San Jose and Santa Maria types; however, the San Jose tradition is generally considered to date prior to A.D. 1000. It is at least as likely that the date pertains to the mixing of the San Jose and Santa Maria types sometime later than the original depositing of either tradition. Furthermore, this date places the occurrence of Santa Maria tricolor at a date later than Santa Maria bicolor. It is best to consider rejecting this late date.

The second date, A.D. 1280 ± 85 (IVIC-177) from the site Ampajango is associated with Santa Maria bicolor ceramics. Cigliano accepts this date, and there seems to be no reason to question it.

The third date A.D. 650 ± 40 (IVIC-187) also comes from Cerro Mendocino, Punto de Balasto. Mario Cigliano (1966) rejects this date because it is not in accord with the accepted chronology for Northwestern Argentina. This date apparently comes from the floor of the same habitation as the A.D. 1340 date, and can only be accepted with reservations because of the apparent mixing of components discussed above. A.D. 650, is however, preferable for dating the ceramic remains as will be seen in the following discussion.

These radiocarbon dates alone are of little value in establishing an association of absolute time to the relative archaeological sequence. Archaeological associations and stylistic comparisons prove to be more useful. Marquez Miranda and Cigliano have found Santa Maria bicolor associated with Inca culture elements, and at Rincon Chico a colonial ceramic type (Capinchango) and glass beads have been found in association with Santa Maria bicolor (Marquez Miranda and Cigliano, 1957, p. 23; 1961, p. 191).

Further evidence for the Incaic association can be found by comparing designs on the most recent bicolor urns with some design elements found on Inca style vessels from Northwestern Argentina. The

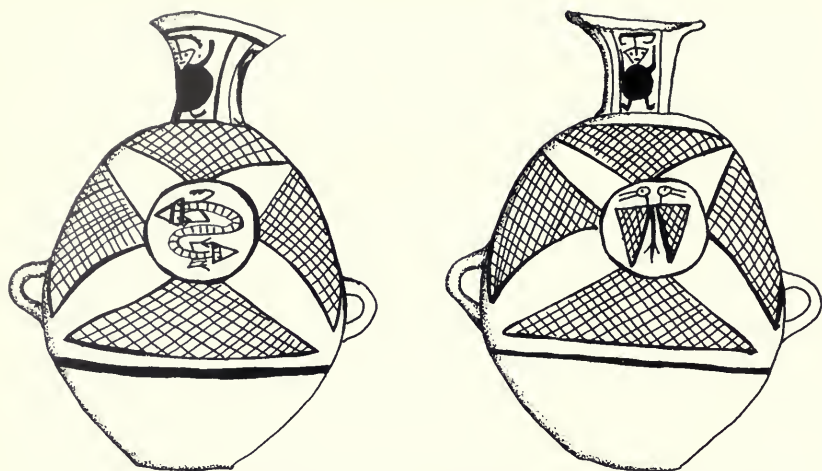


FIG. 15. Two views of an aryballus from Northwestern Argentina (Lafone Quevedo, 1908, p. 395)

aryballoid form (illustrated by Lafone Quevedo and reproduced here as Figure 15) shows some parallels with bicolor pieces from the topmost part of the chart. Warriors similar to the ones depicted on this vessel are found on cheek design (b), which is most common in phase IV. The snake head compares with snake head variety (a), while the two-headed bird design is nearly identical to the one found on no. 3 of cheek variety (a) (fig. 5). Both the triangular-headed snake and the two-headed bird are confined to phase V. This evidence strongly supports the late position of phase V, and suggests it should be contemporary with Inca contacts. In a like situation on the coast of Peru where Inca vessels were exactly imitated, the influence involved a resident Inca population (Menzel, 1959). Santa Maria phase V probably corresponds to the Inca occupation of Northwestern Argentina, and must therefore postdate A.D. 1450, the accepted date for the occupation (Rowe, 1963, p. 205). In order to account for the Santa Maria ceramics that were found in association with colonial cultural elements, we can assume that phase V extended into the seventeenth century.

The A.D. 1280 radiocarbon date discussed above must be reconsidered at this point. The date is associated with bicolor ceramics, and predates the Inca control of Northwestern Argentina. All the vessels from Punto de Balasto that are dealt with in this paper belong to phase IV, and since this is the only purely bicolor pre-Inca phase, one can be sure of the phase IV association of the date.



FIG. 16. An urn from Northwestern Argentina with early Santa Maria design and an attached Condorhuasi-like figure (Lafone Quevedo, 1908, pl. 1).

The three absolute dates for Santa Maria are circa A.D. 1600 for the Santa Maria V colonial contact, A.D. 1450 for the beginning of phase V which corresponds to the Inca conquest of Northwestern Argentina, and A.D. 1280 for some time in the middle of phase IV. These dates suggest that phase IV and V each lasted for as long as 200



FIG. 17, Phase V urns and (a) Inca-style dish from the Zavaleta collection, Field Museum of Natural History.¹

years. If we assume that the other phases lasted similar intervals of time, we have supporting evidence for considerable time depth for the Santa Maria tradition.

The early end of the sequence is not so easily dated. However, the Lafone Quevedo urn (fig. 16) gives some evidence as to the origins of the style. The design on this vessel involves the negative and applique decoration characteristic of earliest Santa Maria, and the heads which are attached to the zig-zag decoration on the lateral panels of the body of the urn are only found on the very earliest vessels of phase I. This vessel is particularly significant because of the attached human effigy which bares a strong resemblance to Condorhuasi figurines (Krapovickas, 1961-1964, pp. 275-287). A fragment of another urn showing both Condorhuasi and Santa Maria

¹ Identification numbers shown on Figures 17-21 and Plates 1-5 correspond to numbers in Appendix.



PLATE 1. See opposite page

stylistic relationships is illustrated by Marquez Miranda (1960, pp. 88-89). González believes that Santa Maria was immediately preceded in time by the San Jose culture, tentatively dated to A.D. 1000; he does not believe that the Condorhuasi culture ever came into direct contact with Santa Maria (González, 1960, p. 305). San Jose burial urn forms are clearly related to the Santa Maria urns of the earlier phase of the sequence, but there is little evidence for evolutionary continuity from San Jose to Santa Maria. San Jose urns generally lack the anthropomorphic design elements that Santa Maria and the Condorhuasi vessels have in common, while Con-



FIG. 18. Phase IV urns from the Zavaleta collection, Field Museum of Natural History.

dorhuasi apparently lacks the vessel forms that San Jose and Santa Maria share. The Santa Maria tradition is composed of elements that can be traced back to both of these styles rather than either single style. It seems that influences from these two distinct cultures were apparently combined to produce the Santa Maria style.

Postulating approximately 200 years duration for each Santa Maria phase, we can project back to A.D. 650 for the beginning of



PLATE 2. See opposite page

phase I. Such a date corresponds well with the A.D. 650 date for the mixed San Jose and Santa Maria tricolor component from the floor of habitation 1 at Cerro Mendocino. It also corresponds well to the end of the Condorhuasi period. The mixed San Jose and Santa Maria component at Cerro Mendocino may indicate that the San Jose style



FIG. 19. Phase III urns from the Zavaleta collection, Field Museum of Natural History.

existed contemporaneously with the hybrid Santa Maria style during the early period; however, the exact nature of the Condorhuasi and San Jose origins of Santa Maria can only be guessed. Further archaeological research employing fine-grained chronologies is required in order to substantiate present speculations.

Further research using refined chronologies, such as the one presented in this paper, is called for if we are to understand the cultural

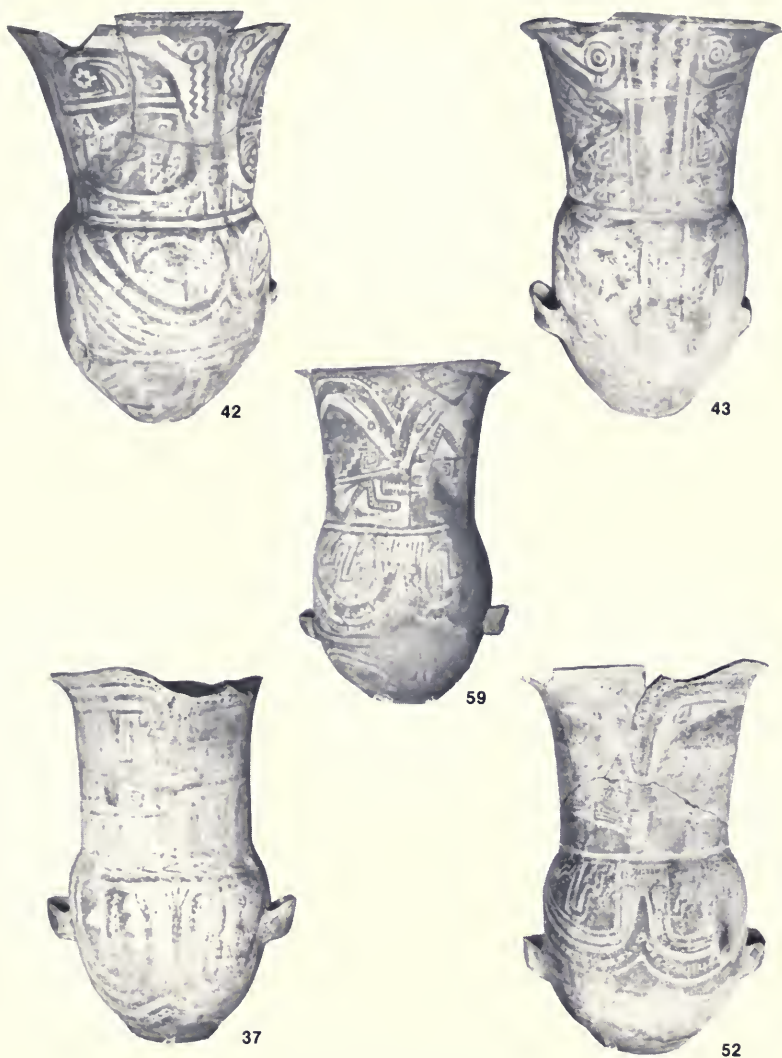


PLATE 3. See opposite page

history of Northwestern Argentina. Archaeologists can answer anthropologically or culturally related questions only if they can be reasonably certain that their chronologies define phases that reflect the cultures of contemporaneous peoples. The aim of this paper has not been to study culture, but to make future cultural studies feasible.



FIG. 20. Urns 77 and 76 are of phase II. Urns 44, 69, 58, and 57 are best placed in phase II, but each has some phase I characteristics. The Zavaleta collection, Field Museum of Natural History.

APPENDIX

List of specimens and figures utilized in this paper and their origins. (FMNH = Field Museum of Natural History.)

1. Provenience not known, FMNH, (102232).
2. Quilmes, Cololao del Valle, FMNH, (102234).

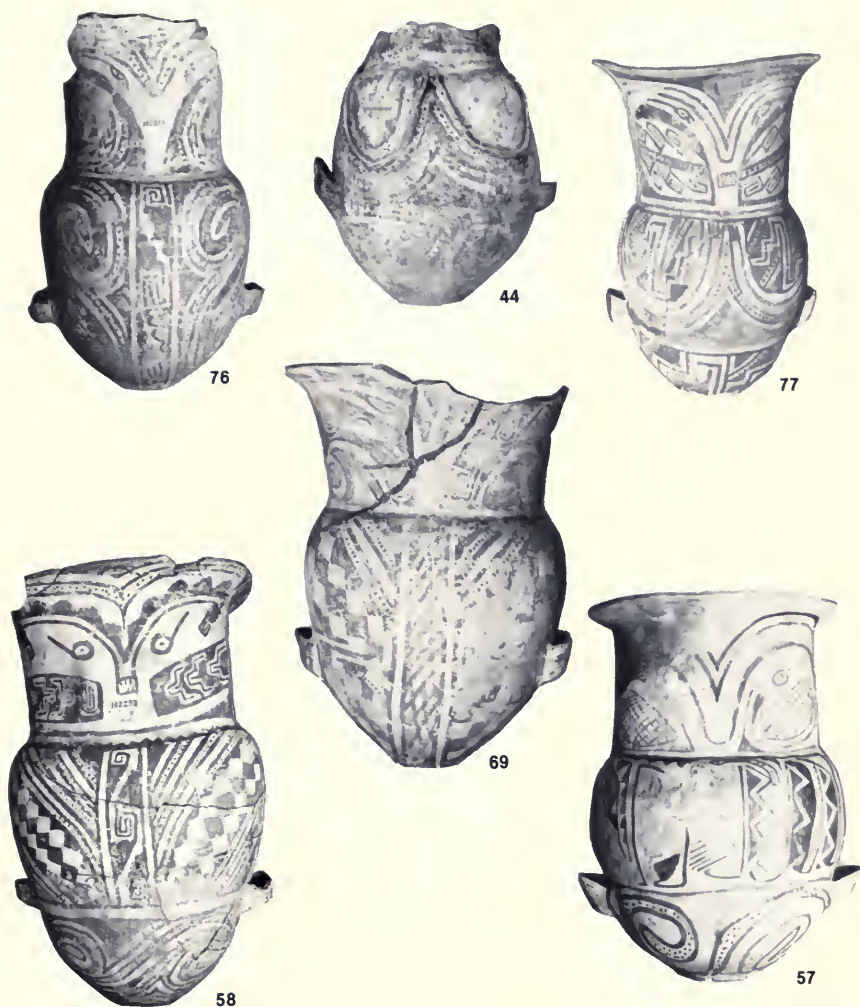


PLATE 4. See opposite page

3. Tafi, FMNH, (102267).
4. Fuerte Quemado, (BVR HN XO $\frac{1}{8}$ $\frac{3}{8}$, P. & $\frac{1}{4}$: Bregante, 1936, p. 18).
5. Santa Maria, (Marquez Miranda, 1936, p. 315).
6. Fuerte Quemado, (Bruch, 1913, p. 91).
7. Rincon Chico, (Marquez Miranda and Cigliano, 1961, p. 192).



FIG. 21. Phase I urns from the Zavaleta collection, Field Museum of Natural History.

8. San Jose, (Quiroga, 1942, p. 188).
9. Rincon Chico, (Marquez Miranda and Cigliano, 1961, p. 192).
10. Loma Rica, (Quiroga, 1942, p. 188).
11. Tafi, FMNH, (102261).
12. Tafi, FMNH, (102247).
13. Provenience not known, FMNH, (102249).
14. Quebrada Chiquimil, (Marquez Miranda, 1946, p. 158).



PLATE 5. See opposite page

15. San Jose, (Quiroga, 1942, p. 140; Levillier, 1964, p. 248).
16. Tafi, FMNH, (102270).
17. Amaicha, FMNH, (102271).
18. Cololao del Valle, FMNH, (102227).

19. Fuerte Quemado, FMNH, (102238).
20. Mojarres, (Marquez Miranda, 1946, p. 149).
21. Lorohuasi, (Marquez Miranda, 1946, p. 149).
22. Punta de Balasto, (Cornley, 1956, p. 43; Marquez Miranda, 1936, p. 321; 1963, p. 643).
23. Santa Maria, (Quiroga, 1942, p. 154).
24. Punta de Balasto, (Marquez Miranda, 1936, p. 318; 1963, p. 643).
25. Punta de Balasto, (Marquez Miranda, 1936, p. 308; 1963, p. 643).
26. Punta de Balasto, (Marquez Miranda and Cigliano, 1957, pl. II).
27. Punta de Balasto, (Marquez Miranda, 1936, p. 320; 1963, p. 643).
28. Amaicha, FMNH, (102263).
29. San Jose (Quiroga, 1942, p. 225) probably the same as vessel 28.
30. Quilmes, Cololao de Valle, FMNH, (102246).
31. Santa Maria, (Quiroga, 1942, p. 225).
32. Quilmes, (Lafone Quevedo, 1908, p. 327; Quiroga, 1942, p. 129).
33. Provenience not known, FMNH, (102287).
34. Quebrada de Chiquimil, (Marquez Miranda, 1946, p. 156).
35. Quebrada de Chiquimil, (Marquez Miranda, 1946, p. 155).
36. Mojarres, (Marquez Miranda and Cigliano, 1957, pl. II).
37. Amaicha, FMNH, (102237).
38. Quilmes, (Lafone Quevedo, 1908, p. 327; Quiroga, 1942, p. 128).
39. Quilmes (Bruch, 1913, p. 39).
40. San Jose, (Quiroga, 1942, p. 129).
41. Fuerte Quemado, (Lafone Quevedo, 1908, p. 327); (Quiroga, 1942, p. 131).
42. Quilmes, Cololao del Valle, FMNH, (102256).
43. Provenience not known, FMNH, (102242).
44. Provenience not known, FMNH, (102229).
45. Yocavil Valley, (Boman, 1908, p. 158, pl. II).

46. Quilmes, (Bruch, 1913, p. 37; Serrano, 1938, pl. XVIII; Marquez Miranda, 1946, p. 156; Bennett et al., 1948, p. 53).
47. Fuerte Quemado, (Bruch, 1913, p. 94).
48. Yocavil Valley, (Boman, 1908, p. 158, pl. IV).
49. Fuerte Quemado, (Bruch, 1913, p. 95).
50. Yocavil, (Boman, 1908, p. 158, pl. IV).
51. Masao, (Marquez Miranda and Cigliano, 1957, pl. I).
52. Cololao del Valle, FMNH, (102236).
53. Yocavil, (Boman, 1908, p. 158, pl. V).
54. Yocavil, (Boman, 1908, p. 158, pl. V).
55. Fuerte Quemado, (Bruch, 1913, p. 97).
56. Santa Maria, (Lafone Quevedo, 1908, p. 325; Bregante, 1926, p. 15; Bennett et al., 1948, p. 53).
57. Quilmes, Cololao del Valle, FMNH, (102291).
58. Amaicha, FMNH, (102233).
59. Provenience not known, FMNH, (102230).
60. Santa Maria, (Quiroga, 1942, p. 142).
61. Fuerte Quemado, (Silvetti, 1952, p. 96, pl. VI).
62. Yocavil, (Boman, 1908, p. 158, pl. IV; Bregante, 1926, p. 14; Bennett et al., 1948, p. 53).
63. Santa Maria, (Posnansky, 1957, pl. LXI c).
64. Santa Maria, (Posnansky, 1957, pl. LIX b).
65. Fuerte Quemado, (Marquez Miranda, 1946, p. 155).
66. Yocavil, (Boman, 1908, p. 158, pl. V).
67. Santa Maria, (Serrano, 1947, p. 32).
68. Quilmes, Cololao del Valle, FMNH, (102265).
69. Quilmes, Cololao del Valle, FMNH, (102244).
70. Amaicha, FMNH, (102259).
71. Santa Maria Valley, (Serrano, 1947, p. 32).
72. Quilmes, (Bruch, 1913, p. 37; Bregante, 1926, p. 19; Serrano, 1938, pl. XVIII; Bennett et al., 1948, p. 53).
73. Quilmes, Cololao del Valle, FMNH, (102240).

74. Quilmes, Cololao del Valle, FMNH, (102257).
75. Provenience not known, FMNH, (102290).
76. Tafi, FMNH, (102254).
77. Tafi, FMNH, (102228).
78. Quilmes, (Bruch, 1913, p. 37; Serrano, 1938, pl. XVIII).
79. Amaicha, Museum of American Indian, Heye Foundation, (8/8921).
80. Amaicha (Canals Frau, 1953, p. 480).
81. Santa Maria, (Marquez Miranda, 1963, pl. 141).
82. Tafi, FMNH, (102258).
83. Fuerte Quemado, (Bruch, 1913, p. 98; Bregante, 1926, p. 20).
84. Amaicha, FMNH, (102251).
85. Quilmes, (Bruch, 1913, p. 37; Serrano, 1938, pl. XVIII; Bennett et al., 1948, p. 53).
86. Masao, (Marquez Miranda, 1936, p. 312; 1963, pl. 141; Marquez Miranda and Cigliano, 1957, pl. I).
87. Fuerte Quemado, (Quiroga, 1942, p. 133).
88. Santa Maria Valley, (Serrano, 1947, p. 32).
89. Santa Maria Valley, (Serrano, 1947, p. 32).
90. Provenience not known, FMNH, (102288).
91. Santa Maria, (Lafone Quevedo, 1908, p. 380).
92. Amaicha, (Bregante, 1926, p. 20; Quiroga, 1942, p. 133).
93. Santa Maria, (Lafone Quevedo, 1908, p. 317; Bennett et al., 1948, p. 53).
94. Amaicha, FMNH, (102241).
95. Provenience not known, (Wagner, 1934, p. 321).
96. Amaicha, FMNH, (102264).
97. Provenience not known, FMNH, (102252).
98. Amaicha, FMNH, (102260).
- a. Dist. of El Paraiso, Amaicha, FMNH, (100766).

REFERENCES

- BENNETT, W. C., E. F. BLEILER, and F. H. SOMMER
1948. Northwest Argentine archaeology. Yale University. Publ. Anthropol. no. 38.
- BOMAN, E.
1908. Antiquités de la région Andine de la République Argentine et du désert d'Atacama. 2 vols. Paris.
- BREGANTE, O.
1926. Ensayo de clasificación de la cerámica del Noroeste Argentino. Angel Estrada Cia, Buenos Aires.
- BRUCH, C.
1913 Exploraciones arqueológicas en las Provincias de Tucumán y Catamarca. Universidad Nacional de la Plata, Buenos Aires.
- CANALS FRAU, S.
1953. Las poblaciones indígenas de la Argentina su origen - su pasado - su presente. Editorial Sudamericana. Buenos Aires.
- CIGLIANO, E. M.
1966. Contribución a los fechados radiocarbónicos Argentinos (I). Rev. Mus. de La Plata (n.s.), 6, pp. 1-16
- CIGLIANO, E. M., MARIA TERESA CARRARA, ANA MARIA LORANDI, SUSANA RENARD, MYRIAM TARRAGO, GUACIELA DE GASPERI, SUSANA PETRUZZI, MARIA LUISA AROCENA, and BLANCA CARNEVALI
1960. Investigaciones arqueológicas en el valle de Santa María. Publ. Inst. Antropol. Facultad de Filosofía y Letras, Universidad Nacional de Litoral, no. 4.
- CORNELY, F. L.
1956. Cultura Diaguita Chilena y cultura de El Molle. Editorial del Pacífico. Santiago.
- GONZÁLEZ, A. R.
1960. Nuevas fechas de la cronología arqueológica Argentina obtenidas por el método de radiocarbón (IV). Rev. Inst. Antropol. Argentina, 2-3, pp. 290-297.
- KRAPOVICKAS, P.
1961-1964. Vasos de cerámica antropomórfos de la cultura Condorhuasi. Rev. Inst. Antropol. Argentina, 2-3, pp. 273-287.
- LAFONE QUEVEDO, S. A.
1908. Tipos de alfarería en la región Diaguita-Calchaquí. Rev. Mus. La Plata, 15, pp. 295-398.
- LEVILLIER, R.
1964. Los Incas y el Quechua en el Noroeste Argentino. Homenaje a Fernando Marquez Miranda Arqueólogo e Historiador de America, pp. 242-284.
- MARQUEZ MIRANDA, F.
1936. La antigua provincia de los Diaguitas. Hist. nacion Argentina, 1, pp. 277-388.
1946. Los Diaguitas, inventario patrimonial arqueológico y paleoetnográfico. Rev. Mus. La Plata, 3, no. 17.

1960. Dos rutas de exploración de relaciones traspacificas y trasandinas con respecto al Noroeste Argentino. *Jornadas Int. Arqueol. Etnogr.* Buenos Aires.

1963. The Diaguita of Argentina, pp. 637-654. *Handbook of South American Indians*, vol. 2. Cooper Square Publishers, New York.

MARQUEZ MIRANDA F. and E. M. CIGLIANO

1957. Ensayo de una clasificación tripológico-cronológica: de la cerámica Santamariana. *Notas Mus. La Plata*.

1961. El yacimiento arqueológico de Rincon Chico, (Dpto. de Santa Maria, Prov. de Catamarca). Extracto de la *Rev. Mus. La Plata*, 5, pp. 179-192.

MENZEL, D.

1959. The Inca occupation of the south coast of Peru. *Southwest. Jour. Anthropol.*, 15, no. 2, pp. 125-142.

MENZEL, D., J. H. ROWE, and L. E. DAWSON

1964. The Paracas pottery of Inca, a study in style and time. *Univ. of Calif. Publ. Amer. Archaeol. Ethnol.*, 50.

POSNANSKY, A.

1957. Tihuanaco, the cradle of American man. Ministerio de Educación, La Paz.

QUIROGA, A.

1942. *La cruz en America*. Edit. Amer., Buenos Aires.

ROWE, J. H.

1963. Inca culture at the time of the Spanish conquest, pp. 183-330. *Handbook of South American Indians*, vol. II. Cooper Square Publishers, New York.

SERRANO, A.

1938. *La etnografía antigua de Santiago del Estero y la llamada civilización Chaco-Santiaqueña*. Casa Predassi, Paraná.

1947. *Los aborígenes Argentinos*. Edit. Nova, Buenos Aires.

SILVETTI, N.

1952. Los lágrimones de la cerámica Andina y particularmente del Noroeste Argentino. *Runa*, 5, pp. 72-109.

WAGNER, E. R. and D. L. WAGNER

1934. *La civilización Chaco-Santiaqueña y sus correlaciones con las del viejo y nuevo mundo*. Compañía Impresora Argentina, Buenos Aires.



UNIVERSITY OF ILLINOIS-URBANA



3 0112 041359156